Risk Management in response to COVID: Comparative Case Study

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The COVID-19 pandemic has affected many aspects of the construction industry. Construction industry members such as owners, developers, subcontractors have experienced varying degrees of impacts because of COVID-19. It is important for companies to adopt risk management strategies to mitigate risk and reduce potential injuries. Due to new rules and regulations mandated by the government, companies had to change the way they operate. This comparative case study focuses on how the pandemic has affected large and small residential companies and compare the risk management strategies set in place by different companies. It was determined that most residential companies were not negatively impacted by the pandemic and that the smallest company had more means/measures to combat risks related to COVID due to government assistance and better risk management strategies. These conclusions were made after conducting semi-structured interviews with employees from three residential companies. The purpose of the case study is to show how most companies do not have risk management plans proactively in place. This is important in identifying the need for more risk assessment so companies can be better equipped in the future.

Key Words: Risk Management, COVID-19, Virtual Workplace, Comparative Analysis, Supply Chain Management

Introduction

In early March, The California Shelter In Place Order was issued on March 16, 2020 that required all individuals to "shelter in place" from March-April. This order deemed low-income housing, healthcare and senior housing and essential construction, so all other construction was put to a stop until April 7, 2020. During this time, many construction companies were in a state of panic and uncertainty for the future of the company. However, in early May, construction was deemed an essential service so work resumed, but with very strict COVID protocols. Proper social distancing and basic hygiene routines were heavily stressed in all the jobsites. All three companies enforced covid-prevention plans but there were differences found in the way each company handled the situation.

The influx of the COVID-19 virus has plunged many construction companies into the most challenging times. Rules and regulations relating to the pandemic have exacerbated these challenges. However, construction companies have been quickly adapting and implementing various strategies to

continue work while following these new rules and regulations. The aims of this paper are to compare the risk management strategies 3 companies of different stature (large, medium, small) have for the pandemic. The hypothesis is that the medium and larger will have more risk assessment methods in place compared to the smaller company because they have more available resources and capital.

Literature Review

COVID-19-Related Risks in the Construction Industry

Construction is an important sector that contributes significantly to the US economy. As noted by Violante et al. (2018), construction projects tend to be similar in most cases. However, each project is unique based on its specific risks. Therefore, Violante et al. (2018) emphasized the need for construction firms to adopt a consistent and proactive approach to risk management throughout a project's lifecycle. The uniqueness of the risks played out in early 2020 when the COVID-19 outbreak led to numerous risks and challenges that construction firms did not anticipate. As a report by Deloitte (2020) demonstrates, COVID-19 led to risks on current contracts, supply chain, construction sites, and people involved in construction activities. However, according to Alsharef et al. (2021), the early impact of COVID-19 on the US construction sector was accompanied with new opportunities as the demand for healthcare facilities increased dramatically. The evidence from United Kingdom's (Ogunnusi et al., 2020) and South Africa's (Amoah & Simpeh, 2020) construction industries demonstrate a similar trend. For example, Ogunnusi et al. (2020) noted how British construction companies adjusted with the new realities associated with COVID-19. Consequently, the negative impact of COVID-19 only affected individuals who lost their jobs.

A study by Alsharef et al. (2021) explored the impact of COVID-19 on the US construction industry. Specifically, Alsharef et al. (2021) identified widespread disruption of operations, economic slowdown, and various hardships as the main risk factors within the construction industry. In particular, many US-based construction companies experienced challenges including delays and failure to complete projects within schedule. According to Deloitte (2020), one of the operational implications of COVID-19 was related to current contracts. Notably, disruptions and delays to contracts were a major challenge that affected many construction firms.

The pandemic also led to the suspension or termination of contracts. Many investors adopted the 'wait-and-see' approach due to the obvious uncertainties associated with COVID-19 (Deloitte, 2020). In the worst-case scenario, the escalation of disputes due to cash demands threatened the operation of construction firms across the world. For example, Alsharef et al. (2021) identified increased costs associated with risk management measures. The need to adjust to safety protocols and training to prevent the spread of COVID-19 infections contributed to the increased cost of operations.

The implication of COVID-19 on the supply chain is also evident. Construction firms, regardless of size, depend on manufacturers and suppliers for construction materials. According to the report by Deloitte (2020), the global nature of the pandemic slowed and delayed the supply of materials from local and international suppliers. Alsharef et al. (2021) provided adequate empirical evidence on the inability to secure construction materials on time. Evidence by Ogunnusi et al. (2020) and Alsharef et al. (2021) demonstrated how construction companies were forced to pay more for building material, as prices skyrocketed due to the impact of the pandemic on the entire supply chain
COVID 19 also increased the demand for construction material from local manufacturers and suppliers. Notably, the federal and state governments were forced to rapidly construct healthcare facilities to meet the urgent demand due to the high number of COVID-19 infections. As such, the

rapid increase in demand for construction was to blame for the increased prices and delays within the supply chain (Alsharef et al., 2021). The evidence above shows the opportunities that some companies may have exploited in constructing new healthcare facilities. However, for the majority of construction firms, the pandemic presented serious risks and challenges. This is evident in the employment data presented in Table 1. As Table 1 illustrates, the number of Americans employed in the construction industry dropped sharply between March 2020 and April 2020. Although the figures increased gradually in the following months, the original employment of over 7.5 million has not been reached as COVID-19 rendered many Americans jobless. It is worth noting that, for construction firms, the increased demand for healthcare facilities was an opportunity to take and manage risks associated with COVID-19. The sharp increase in construction jobs from April 2020, as Figure 1 shows, is a clear indication of how the US construction firms overcame the risks and exploited the new opportunities.

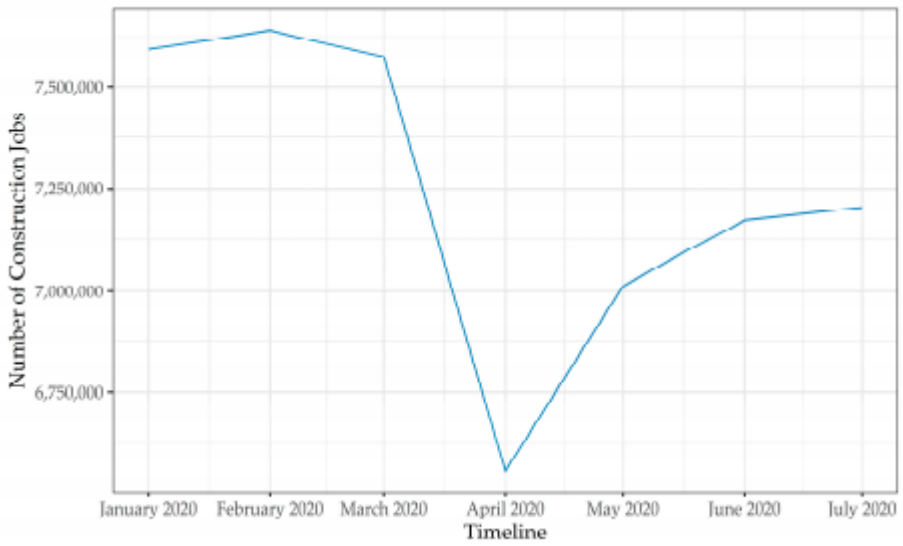

Figure 1: Employment data for US construction industry: January 2020- July 2020 (Alsharef et al., 2021)

COVID 19 introduced new challenges as far as workplace safety is concerned. Firstly, Companies had to follow new guidelines and regulations to contain the spread of COVID-19 from one employee to the other. For example, Alsharef et al. (2021) demonstrated how the collaborative nature of work in construction sites and the transient nature of the workforce involved greatly increased the risk of infections. The requirements for temporary shutdown coupled with mandatory quarantining interrupted operations at construction sites.

Secondly, the pandemic had a negative implication on human resource, considering the labor-intensive nature of construction projects (Deloitte, 2020). There has been a significant reduction in human resource productivity as many construction workers preferred staying at home as a way of protecting themselves and their families. Therefore, it is crucial to assess the risk management measures applied within the construction industry considering the significance of the aforementioned negative implications.

Risk Management in the Construction Industry

Risk management can be defined as "a process of identifying, measuring, and financial control of a risk that threatens the assets and income of a company or a project that can cause damage or loss to a company" (Santoso & Riyanto, 2020, p. 602). Construction companies adopted a wide range of risk management measures to curb the negative impact of the COVID-19 pandemic. Notably, construction firms were keen on prioritizing the safety of their workers in the wake of rapid infections at the workplace. COVID-19 introduced new challenges as far as Occupational Safety and Health Administration (OSHA) standards are concerned (Chivilo, Fonte, & Koger, 2020). The pandemic increased the occupational safety and health risks from the traditional ones associated with a construction site. In particular, the need for social distancing and protective gear against the virus forced construction companies to adjust their standards and regulations. For example, Alsharef et al. (2021) revealed how construction firms adopted new social distancing protocols and strictly required employees to wear a facemask. Others reduced construction operations as a way of reducing crowding and possible employee-to-employee COVID-19 infections. In the same vein, construction companies offered training related to COVID-19 and administered temperature checks in a bid to prevent the spread of their study.

Scholars agree such measures were critical risk management steps necessary not just to protect employees but construction firms (Chivilo et al, 2020; Amoah & Simpeh, 2020; Violante et al., 2018; Alsharef et al., 2021). For example, it was justifiable to put the necessary measures as a way of retaining valuable employees. As a labor-intensive industry, assuring employees of their safety was necessary for convincing them to take the risk and continue going to work. Importantly, avoiding infection meant that productivity was not lost. For example, employee-to-employee COVID-19 infections meant that an entire team of workers will have to stay away for at least two weeks . As such, taking strict measures in protecting employees was crucial risk management that could lead to positive economic outcomes at the company level.

Construction companies have invested in the formation of a task force to assess a wide range of project risks associated with COVID-19(Alsharef et al., 2021). Studies conducted before the COVID-19 outbreak show how the capacity of managing risk differed depending on the characteristics of construction firms (Amoah & Simpeh, 2020; Violante et al., 2018). Notably, Violante et al. (2018) investigated whether small construction companies are prepared to take effective risk management measures to address emerging risks. According to Violante et al. (2018), small companies lacked alternative or contingency plans as part of risk management. As such, small construction companies have no leverage in case unpredictable events with risks occur Therefore, there is a need to compare risk management measures that various construction firms have applied so far. Comparing large, medium, and small firms will provide the much-needed evidence to show how such measures differ by size.

The outbreak of the COVID-19 marked a critical turning point for many companies across different sectors. Notably, companies dealing with non-essential services suffered a major blow as many consumers preferred prioritizing basic needs (Stiles, Golightly, & Ryan, 2021). Governments across the globe adopted different measures including lockdown, curfew, and limiting social interactions. In the US, the impact of COVID-19 on specific sectors of the economy equally differed depending on the nature of services and products offered. The US for instance has suffered the most with over 28.7 million deaths and 519,000 deaths by 5th, March 2021 (Joe Fox, 2021; CDC, 2021). From an economic perspective, the US is expected to record a GDP loss ranging between $3.2 and 4.8$ trillion in just two years (Walmsley, Rose, & Wei, 2020). According to Walmsley et al. (2020), the mandatory closures and partial re-opening of businesses are the main factors that led to economic

loss. As such, the impact of COVID-19 and the risks involved are sector-specific and their risk management strategies are a crucial part of surviving the pandemic. A study by Pasco et al. (2020) demonstrated a strong association between construction work, the risk of corona-virus infections and hospitalization. According to Pasco et al. (2020), hospitalization data showed that construction workers in Texas had a five-fold increased risk of hospitalization compared to other occupations. Therefore, there is a need to assess industry-specific risks associated with the construction industry. In particular, there is a need to compare small, medium, and large construction firms. In doing so, it will be possible to determine firm-specific risk management efforts and the capacity of such companies to take advantage of new opportunities and minimize related risks

Methodology

This comparative case study uses qualitative research collected using primary sources and interviews. Some secondary sources such as news articles and academic journals are also used for research. To obtain information on risk management methods used by residential companies, 6 semi-structured interviews with project managers and superintendents were conducted. Thankfully to faculty assistance, 2 employees from 3 residential companies of different size (small, medium, large) agreed to an interview. The purpose in conducting 6 interviews was to interview at least 2 different employees from each company to gain perspective on the challenges these different companies faced and to compare the risk management strategies used by the 3 companies. There was a total of 7 questions the interviewees answered and each interview took around 30-45 minutes. Due to the pandemic, all the interviews were done over the phone.

Company Information

Company A is a large residential company and is the 3rd largest home construction company in the United States based on the number of homes closed. Company A closes around 900 homes annually resulting in around $11 Billion. Company A currently has over 5,000 employees and does work all throughout the United States having offices in California, Arizona, Colorado, and Georgia.

Company B is a mid-sized residential company located on the Central Coast for over 30 years. Company B has 60 employees and made $11 Million in 2020.

Company C is a small mom-pop residential company located in Marin County. The company is family-owned and has around 15 employees.

Interviewee Information

Interviewee	Company	Location	Position	Type of Construction
1-Large	Company A	San Francisco	Senior field manager	Residential
2-Large	Company A	San Francisco	Project Manager	Residential
3-Medium	Company B	San Francisco	Project Manager	Residential
4-Medium	Company B	San Francisco	Project Engineer	Residential
5-Small	Company C	Marin County	Project Manager	Residential
6-Small	Company C	Marin County	Field Manager	Residential

Interview Questions

1. What company do you work for and how big is the company?
2. What position do you have in the company and what does your day to day operation look like?
3. Has the pandemic changed how the company operates and if so, how?
4. Did the company face any shortage in material or labor?
5. What other challenges did the company/you face and what risk management methodologies were put in place to combat these risks?
6. Did the company receive any form of government assistance?
7. Do you see any benefit in hindsight, the pandemic will have for the residential sector?

Data Analysis

COVID-19 Impact: All three companies enforced covid-prevention plans but there were differences found in the way each company handled the situation. Company A reduced the number of workers on a jobsite and instilled more sanitation stations throughout the jobsite. Company A also hired distance monitors who would make sure field workers were properly social distancing.

To make sure all employees got their temperatures checked before entering the jobsite, Company B had all jobsites have a single-entry access. Every morning, Company B sends out a mandatory survey for workers regarding their health and possibility to exposure.
Company C also had a single-entry access for all jobsites. However due to this implementation, Company C spent 30 minutes everyday getting everyone onsite. Also, having to disinfect and wipe the jobsites led to an increase in costs and additional time. Having acknowledged the fundamental inefficiency of the protocol, Company C staggered and stretched out the project schedules to not stack jobsites with workers and to have different trades entering and leaving at a specific time.

Supply Chain Management Issues: The impacts of COVID-19 in the residential sector have been widespread. Due to warehouses shutting down and disruptions in the supply chain, there has been a limited supply of building materials. This has made acquiring materials take longer, become more expensive and harder to obtain.
To avoid this problem, Company A had to outsource a lot of their materials and find new warehouses and suppliers. Although this was an extremely arduous task, it was necessary as lumber prices for building skyrocketed and basic appliances were backlogged causing delays.
Similar to Company A, Company B had to relocate items. Factors such as shipping time and costs all had to accounted for as project deadines were approaching. Because the lead time for materials increased notably for stone veneer and appliances, Company B has had to outsource materials and find alternative materials and suppliers for multiple jobsites.
Company C also had trouble acquiring material but were in more luck. Because the projects did not require specific materials and are typically small not needing as much material, Company C did not have to outsource or relocate materials but just wait for the materials to arrive.

Transition to Virtual Workplace: Since The Shelter in Place Order, all companies had to transition to a virtual workplace. Company A only had a couple people in each office. For example in the Mission Viejo office, the number of employees were cut from 40 to 5. Nearly all meetings within the company and with outside entities have transitioned to teleconferences as opposed to the traditional-in person meetings. Having transitioned to a more virtual workplace allows the company to

resume work without breaking any COVID-19 protocols. Company A implemented Microsoft Teams and Zoom in order to collaborate virtually.
Company B pivoted to a virtual workplace since offices shut down in March. Company B transitioned into a 100% virtual workplace and have been using Zoom to communicate.
Company C did not have to shut down the office but did transition to a virtual workplace. However, because there are not many office workers and thus would not break COVID protocols, people were still allowed to come to the office if they preferred to. Company C also has in-person meeting once a week at the office, following the COVID protocols.

Government Assistance: In response to COVID-19, governmental relief packages such as the Applied Paycheck Protection Program and other federal packages came out to help small businesses. Essentially these packages gave these small companies a forgivable loan of 2.5x of the company's monthly payroll and overhead monthly cost, allowing companies to pay employees when no work is being done. Company C was accepted for a relief package and was given $400,000 for the payroll of the employees, disregarding the subcontractors. Although no one was working in the months MarcJune, Company C was still able to pay the workers. Company B applied for the package but was denied and Company A was ineligible to apply.

Comparative Analysis

From the interviews, it seems all three companies had a similar approach in dealing with the pandemic. However, there are difference in the way each company handled each situation. Company B and C had a single-entry access for all jobsites unlike Company A. Company A was unable to have a single-entry access for all jobsites because of the size of the jobsites. Despite Company A having more money than the other companies, Company B and C did a better job with coming up with a plan to continue work while following COVID protocols. In addition, all three companies transitioned to a virtual workplace and are thinking of allowing employees to continue working from home even after the pandemic. However, Company C is the only company that implemented an in-person meeting weekly. In terms of supply chain issues, Company A and B outsourced and relocated materials preventing further scheduling delays, unlike Company C.

Surprisingly, Company C, the small company, seemed to have the "easiest" time during the pandemic. Due to government assistance allowing them to pay employees, Company C was able to continue work without any labor shortage. Although Company A and B had more money to spend, Company C seemed to do a better job implementing COVID protocols and safety measures.

Conclusion

With lockdowns hitting the big cities the hardest, followed by a summer of rioting throughout major cities across the country, urban flight became a significant force within the housing market. This trend coupled with the historically low interest rates accompanied with the financial shock of the lockdown ultimately led to a housing boom for builders. At the beginning of the lockdown, all three companies had clients cancelling transactions. However, since the housing market exploded, all three companies saw a massive acceleration in the closing of homes, something they have not seen since the 2008 housing market crash. It is due to this boom that residential companies are doing well despite the pandemic.

According to the research, there were a lot of similar challenges that the companies faced due to COVID-19. One of the key takeaways from the interview was that there were no proper procedures or

risk management plans that were preemptively in place. It seems like most companies are not prepared and are not equipped with any risk management protocols if another problem does arise.

Areas of Future Research

Most companies are not prepared and do not have any sort of risk management protocol/policies in place for when a problem does arise. After looking at this, research can be done on how these companies can implement a risk management strategy into their protocols so that they are more prepared when a disaster like this does happen again. Also, as the workplace has transitioned to a more virtual environment, companies are slowly starting to implement these technologies into the company. In hindsight, the pandemic has made it so old, traditional companies must use technology such as Zoom. Future research on the benefits of the pandemic and the possible technological revolution in the residential industry could be possible. Another interesting area of future research can be comparing how different companies (residential, heavy civil, commercial) were affected by the pandemic.

References & Appendix

Alsharef, A., Banerjee, S., Uddin, S. M., Albert, A., & Jaselskis, E. (2021). Early Impacts of the COVID-19 Pandemic on the United States Construction Industry. *International journal of environmental research and public health*, *18*(4), 1559.

Amoah, C., & Simpeh, F. (2020). Implementation challenges of COVID-19 safety measures at construction sites in South Africa. *Journal of Facilities Management*.

CDC. (2021). CDC COVID Data Tracker. Retrieved March 6, 2021, from https://covid.cdc.gov/covid-data-tracker/#datatracker-home

Chivilo, J., P., Fonte, G., A., & Koger, G., H. (2020). A look at COVID-19 impacts on the construction industry. Retrieved 5, March 2020 from https://www.hklaw.com/en/insights/publications/2020/05/a-look-at-covid19-impacts-on-the-construction-industry

Deloitte. (2020). How the Construction Industry can take Proactive Steps to Mitigate the Impact of COVID-19 Restrictions. Retrieved 5, March, 2020 from https://www2.deloitte.com/content/dam/Deloitte/ie/Documents/FinancialServices/IE_RE_ConstructionIndustryCovid_0320_final.pdf

Joe Fox, B. M. (2020, June 26). U.S. coronavirus cases: Tracking deaths, confirmed cases by state. Retrieved March 6, 2021, from https://www.washingtonpost.com/graphics/2020/national/coronavirus-us-cases-deaths/

Ogunnusi, M., Hamma-Adama, M., Salman, H., & Kouider, T. (2020). COVID-19 pandemic: the effects and prospects in the construction industry. *International journal of real estate studies*, *14*(Special Issue 2).

Pasco, R. F., Fox, S. J., Johnston, S. C., Pignone, M., & Meyers, L. A. (2020). Estimated association of construction work with risks of COVID-19 infection and hospitalization in Texas. *JAMA network open*, *3*(10), e2026373-e2026373.

Santoso, A., & Riyanto, S. (2020). Risk Management Strategies at PT X Construction Company during Pandemic COVID-19. *International Journal of Research and Innovation in Social Science,* 4(6), 601-605.

Stiles, S., Golightly, D., & Ryan, B. (2021). Impact of COVID-19 on health and safety in the construction sector. *Human Factors and Ergonomics in Manufacturing & Service Industries*.

Violante, A., Dominguez, C., & Paiva, A. (2018). Risk Management in Construction Projects: Are Small Companies Prepared? MOJ Civil Eng 4 (1): 00090. DOI: 10.15406/mojce. 2018.04. 00090. *Risk Management in Construction Projects: Are Small Companies Prepared*, *2*(7).

Walmsley, T., Rose, A., & Wei, D. (2020). The Impacts of the Coronavirus on the Economy of the United States. *Economics of disasters and climate change*, 1-52.